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BOTANY.—*Notes on the taxonomy of American and Mexican Upland cottons.* FREDERICK L. LEWTON, U. S. National Museum.

A testimony to the difficulties in the way of assigning the proper botanical names to the many cultivated species and varieties of cotton is seen in the fact that students of the taxonomy of the genus *Gossypium* are not in accord as to the proper name which should be assigned to the group of varieties yielding the bulk of our annual crop of Upland cotton amounting to millions of bales.

The name most commonly accepted for this important crop plant is *Gossypium hirsutum* L., the first American species to be recognized by Linnaeus as distinct from Old World cottons. Some students of this question, like Fletcher and Watt, after examining the Linnean specimens, noting that his name *hirsutum* was intended to apply to a cotton plant having seeds with green fuzz and a flower with red spots on the bases of the petals, have restricted the name *G. hirsutum* to a small group of varieties of Upland cotton having the above named characteristics; and have assigned other names to the bulk of the cultivated forms yielding American Upland Cotton. Sir George Watt uses *G. mexicanum* Todaro to cover "Mexican cotton and the bulk of the Upland Americans;"[1] while Fletcher believes *G. siamense* Tenore to be the true name of our plant.[2] Before trying to decide between these two views let us examine the validity of the arguments presented by the above writers in advocating the names proposed by them.

[1] Watt, Sir George: *The wild and cultivated cotton plants of the world*, pp. 226–244. 1910.

[2] Fletcher, F.: *Botany and origin of American Upland cotton*, Cairo Sci. Journ. 3: 264–266. 1909.

MEXICAN UPLAND COTTON NOT GOSSYPIUM MEXICANUM

The bulk of the commercial cotton crop of Mexico is yielded by a species of *Gossypium* for which as yet we have no adequate name. To supply this deficiency, Sir George Watt makes use of an apparently appropriate specific name, *G. mexicanum* Todaro.

Todaro's name does not seem to have been taken up by any other student of the cottons until used by Watt in 1910. The latter does not cite any of Todaro's actual specimens, nor indeed any specimens from Mexico, but apparently after deciding to apply *G. mexicanum* to the broad-leaved Mexican cottons of the general upland type he finds specimens from all over the world in the herbaria of Kew, British Museum, Geneva, and Calcutta, which he assigns to this species. Before accepting Watt's identification of "Mexican cotton" let us see if we can determine what kind of a cotton plant was in the mind of Agostino Todaro when he proposed the name *Gossypium mexicanum*. A brief description in Latin under this name was first published in 1868 in the list of seeds which ripened in 1867 in the Royal Botanic Garden at Palermo, Sicily; later a fuller and more detailed description was presented by Todaro in his monograph of the genus *Gossypium*, published in 1878. This description was strengthened by an excellent colored plate, and shows a shrubby small-bolled plant yielding tawny colored cotton and small flowers with a spot at the base of each petal. He gives the habitat of the plant as "Northern Mexico" and says that seed of this species was sent to him in 1864 by the "celebrated Professor Decaisne" under the name "*Coton sauvage de Siam dit Siam clair*," with the statement that it was shrubby and perennial. The label on the specimen of cotton seed sent by Decaisne from the Botanic Garden at Paris at once arouses a question in the mind of the reader as to what "Wild Siamese Cotton" was doing in Mexico about 1864. At first thought it would seem that Todaro had misquoted Decaisne and unintentionally connected Siam and Mexico together, but an examination of Todaro's writings develops that in three distinct papers he mentions the wild Siamese cotton having a habitat in Mexico.[3]

That such a species of cotton as was described and figured by Todaro is really to be found in Northern Mexico was proven by that indefatigable collector of Mexican plants, Dr. Edward Palmer, who brought to Washington from Victoria, Tamaulipas, Mexico, specimens and fresh seeds of a shrubby brown-linted cotton which he said was locally known as *socollo* or *cocoyo*. Plants grown by the writer in Texas and Florida from the seeds brought by Dr. Palmer appear as almost exact counterparts of Todaro's plate of his *G. mexicanum*.[3] From carefully made field notes put down from the living plants at Brownsville, Texas, the following description has been drawn:

[3] Todaro, Agostino: *Relazione sui cotoni coltivati al R. Orto Botanico nell'anno 1864*, in Atti della Societa di Acclimazione e di Agricoltura in Sicilia **4**: 164. 1864.

Todaro, Agostino: *Index seminum Horti Regii Botanici Panormitani, ann. 1867*, p. 20 and 31. 1868.

Todaro, Agostino: *Relazione sulla cultura dei cotoni in Italia*, 193, *pl. 6*. 1877.

Gossypium mexicanum Todaro

Plant woody 1.5 to 2.5 meters high, very strict and open, branching very low. Stem erect, slightly hairy, green or reddish. Basal limbs numerous, ascending, gradually becoming smaller upwards. Fruiting branches 15 to 20, ascending internodes very long, bolls not clustered nor fasciated.

Leaves 10 to 13 cm. long from base to tip, width the same, dark green, quite smooth above, smooth below, very flat, not thrown up in folds at the sinuses, 3-lobed, divisions broad, basal sinus deep, open; pulvinus very small, red; petioles 6 to 10 cm. long, slightly hairy; nectaries present, small, oval very deep, edges not raised.

Bracteoles small 2.5 to 4 cm. long, 2 cm. wide, oval, auriculate at base, almost smooth, thin, laciniae 6 to 8, hairy, extremely long, especially the middle one; nectaries 3, medium-sized, oval, shallow, not hairy; bractlets absent.

Calyx, much appressed to the corolla tube, with conspicuous teeth, smooth; extra-floral nectaries on the calyx 3, medium-sized, smooth, elliptical; internal floral nectary broad, hairy hand broad.

Petals small, 3.5 cm. long, yellow, usually with a small purple red spot on the claw.

Stamens variable in length, scattered, staminal tube not toothed at apex; pollen cream-colored, plentiful, style exserted.

Bolls exceedingly small, 1 to 1.5 cm. in diameter, round, blunt, 3- and 4-locked, short-stalked, erect, open poorly; oil glands very prominent, but a little below the surface, scattered.

Seeds average 5 per lock, rather small, loose, very fuzzy; fuzz at first gray-green, later becoming rusty brown.

Lint sparse, pale greenish brown changing to light brown on exposure to light; fine, soft, short, weak.

The growing plant appears much like the common Mexican tree cotton, with its long ascending limbs and smooth, thin, flat leaves.

The assigning of a specific name in the form of a geographical adjective to a plant whose limits of distribution are not known at the time often leads to the choice of a name which does not at all indicate the region where the plant is most abundant. Witness for example the many plants whose specific name *canadensis* is far from indicating their true range of distribution. A geographical specific name is also misleading even when it truly expresses the plant's native home if it is bestowed upon an obscure species when the same area is occupied by more common or conspicuous species. However this may be, the rules of taxonomy provide that even if the specific name is inappropriate for either of the above reasons, it must be used if properly published and not set aside by an older name. We have such a case in *Gossypium mexicanum* Todaro.

How much influence the Mexican types of Upland cottons have had in the development of particular varieties cultivated in our cotton belt is still a matter of conjecture rather than of record, but certainly the species described by Todaro and the small-bolled, brown-fibered cotton found by Dr. Palmer had no part in the development of the Upland cottons of the United States, and none of the varieties belonging to this group of Upland cottons are referable to *G. mexicanum* Todaro.

"SIAM" COTTON

Fletcher's argument,[2] that *G. siamense* Tenore is the true name for American Upland cotton, is not to be disposed of so easily, even though he misquotes both Du Pratz and Tenore, on whose accounts he mainly depends. His argument, in brief, is as follows: (1) That *G. hirsutum* L. is typified by a plant bearing 3 to 5-toothed bracteoles and flowers with dark red petal spots in the center, neither of which characterize our Upland cottons; (2) that in a large collection of varieties grown by him, the one most typical of the Upland cotton was a Cambodian variety, considered a native of that country; (3) that in 1758 "Du Prate" (Du Pratz) tells of the French colonists growing white cotton of Siam in preference to the Turkey kind "cultivated in our colonies;" (4) that in 1839 Tenore figured and described under the name *G. siamense*, "apparently from the country of origin," a cotton of the Upland type; and (5) that although *G. religiosum* L. "is undoubtedly the Upland plant," and has priority over the name given by Tenore it has been applied by others to so many totally different varieties "that it seems best to drop it altogether." However, Tenore's name *siamense* of 1839 was already preoccupied by Tussac in 1818 for a different type of cotton known at that time in San Domingo as Siamese cotton.

Fletcher brings no proof of the Asiatic origin of his Cambodian Upland cotton other than the opinion of the agricultural authorities there that it is indigenous, and the existence of a similar supposedly wild type in the Philippines. Undoubtedly the presence of this cotton in the Philippines is due to the same cause as that of many other American plants found there; the early commerce between Spain and her eastern colonies *via* Mexico. Although Tenore was unable to trace the geographical origin of his white cotton of Siam he used the specific name *siamense* because he was unable to find that this variety had in Italy ever borne any other name. Du Pratz did say that the cotton successfully raised by the French colonists in Louisiana was of the "white cotton of Siam," but the statement often credited to him, that the cotton "cultivated in our colonies is of the Turkey kind," was added in a footnote by the English translator and refers to the British Colonies. Moreover, a few years later, a number of quite distinct types of cotton were known and described from the West Indies as "Siam cotton."

The following quotations and translations taken from the works of several 18th and early 19th Century writers indicate the widespread knowledge of "Siam" cotton 100 to 200 years ago:

PÈRE LABAT:[4] "There is in the islands another species of cotton whose seeds have been brought from Siam, and named for this reason cotton of Siam. It has naturally the color of clear coffee. It is of an extraordinary fineness, it is long and softer than silk. There is made of it stockings of an admirable fineness and so beautiful as to make blush the best silk stocking."

DU PRATZ:[5] "The cotton which is cultivated in Louisiana is of the species

[4] Labat, Père: *Nouveau voyage aux Isles de l'Amerique* **2**: 406. 1724.

[5] Du Pratz, Le Page: *Histoire de la Louisiane* **3**: 364. 1758.

of the White Siam, though not so soft nor so long as the silk-cotton it is extremely white and very fine, and very good use may be made from it."

Note *added* by translator of the English edition of 1774: "This East-India annual cotton has been found to be much better and whiter than what is cultivated in our colonies, which is of the Turkey kind. Both of them keep their color better in washing, and are whiter than the perennial cotton that comes from the islands although this last is of a better staple."

BOSSU:[6] "The cotton of this country is of the species called white cotton of Siam. It is neither so fine nor so long as the silky cotton, but it is however very white and very fine. Its leaves are of a lively green and resemble spinage very much; the flower is of a pale yellow, the seed contained in the capsule is black, and oval like a *kidney* bean."

LAMARCK:[7] "It is claimed that there exists in the Kingdom of Siam, a cotton plant which produces cotton of a russet or reddish color and of an extreme fineness, and it is said to be of a quality superior to other cottons. This cotton plant would appear to us to be still unknown to Botanists and should be different from the species that we come to mention, seeing that these all produce strong white cotton, even those which are grown in the East Indies and Moluccas. They cultivate in the West Indies a cotton plant analogous to that in question and which they call there *Cottonier de Siam*. It is remarkable in that it produces a reddish cotton or one of a good chamois color and very fine. They make of it stockings of an extreme fineness and which are preferable to silk stockings by their cost and their beauty. There are nevertheless very few of them made because they consume so much time."

CAVANILLES:[8] "In the Royal Garden of Paris I saw a plant, not in bloom, named *Gossypii flavi Siam*, which seems to be reducible to this (*G. religiosum*); the leaves themselves are quite the same as *G. religioso* and it is true also the wool is yellow and not white as in other species."

VON ROHR:[9] Of the 34 varieties of cotton described by Von Rohr and experimented with by him on Saint Croix, 4 were obtained from Martinique where they were known as "Siam rouge" or "Siam blanc" (Von Rohr's numbers 13, 16, 19 and 25).

The following paragraphs are from Von Rohr's notes describing the varieties grown by him:

"No. 13 *Siam lisse*, brownish smooth Siam, plain nankeen; grows the highest of all and already in the second year is 12 feet and spreads its branches 8 feet. Bolls small, fall easily, the staple weak; seeds smooth."

"No. 16 *Siam couronne*, brownish crowned Siam; wool paler in color than No. 13 and swells out of the boll better."

"No. 19 *Siam blanc*, white Siam; raised at Aux Cayes and Martinique. Outside of the harvest it is impossible to tell this (white Siam) from No. 16 (brown Siam), even when they stand next to one another. . . . .

"One would naturally think the white Siam was a sub-variety of No. 16, but such is not so. I have grown both in quantities since 1785 and both have held to their own characteristics. The wool of the white Siam is unusually white, never gets dirty on the tree and never has a colored fiber."

[6] Bossu: *Travels through Louisiana* **1**: 377–379. 1771.

[7] Lamarck, Chev.: Encyc. Method. Bot. **2**: 136. 1786.

[8] Cavanilles, A. J.: Monodelphiae classis Dissertationes, Sexta Dissert. **3**: 314. 1788.

[9] Von Rohr, Julius Philip Benjamin: *Anmerkungen über den Cattunbau zum nuzen der Daenischen Westindischen Colonien 1791.*

"No. 25 *Brownish fuzzy Siam*, mossy nankeen. In Guadeloupe called *Siam rouge velu*. Has been grown for many years by Mr. Von Oxholm. The color of the wool is isabella, it is very tender and elastic; seeds fuzzy."

RAFINESQUE:[10] This prolific writer, fifty years after the appearance of Von Rohr's book, assigned Latin names to each of Von Rohr's 34 varieties and published very brief descriptions in Latin drawn from Von Rohr's notes. Rafinesque of course never worked with cotton plants, either living or in herbaria.

The following are the names given to Von Rohr's Siam cottons by Rafinesque:

Gossypium fuscum Raf. Plain nankeen, Von Rohr No. 13.
G. pallens Raf. Crowned nankeen, Von Rohr No. 16.
G. asiaticum Raf. White Siam, Von Rohr No. 19.
G. isabelum Raf. Mossy nankeen, Von Rohr No. 25.

DE LASTEYRIE:[11] This author includes an annotated list of 18 cotton varieties which he credits to M. de Badier, a cotton farmer of Guadeloupe, who made his experiments there in 1785–1787 (same time as Von Rohr in St. Croix). The list is divided into two groups, the commercial cottons and the uncultivated varieties which are used only by the Indians.

"*Cotonnier Siam batard a graines recouverte d'un duvet verdatre obscur.* Distinguished by its dirty red cotton and by its seeds which are obscurely greenish."

"*Cotonnier Siam batard a graines noires et lisses.* It differs from No. 3 by its seeds; the rest is the same."

"*Cotonnier Siam franc.* Cotton brownish red; differs from Nos. 3 and 5, by the felt which adheres to the seeds, and of a brownish red. The cotton is very good." De Lasteyrie also gives a table of Von Rohr's 34 varieties, using his names and tabulating his data as to character of lint and habit of plant.

DE TUSSAC:[12] "There is found in the Antilles only one species of indigenous cotton which is commonly known under the name of "Maron" cotton. I consider it identical with the one I have just described (*G. tricuspidatum*). The other species cultivated there have been brought from the East Indies. . . . . The species cultivated by preference in the Antilles is the hairy cotton (*G. hirsutum*) with white lint and its variety with brown lint, the one with hairy seed adherent to the lint, the other with smooth seed easily detached from the lint. . . . .

"A fourth species of cotton, less cultivated than the three others, is the cotton of Siam (*G. siamense*), this is a small annual shrub which does not attain a height of more than three feet, whose reddish branches are spread out and hang to the ground, and produces a kind of cotton brown in color, or sometimes white, whose lint surpasses in fineness and length all the other species known. The shrub on account of its smallness does not bear much cotton. Its culture is convenient, but for one reason, that is, because it can be cultivated in dry places where other varieties do not succeed. Some authors have claimed that the Chinese manufacture the nankeens, which are sold to Europeans with this species of cotton, but I assured myself that the brown cotton of Siam bleaches upon being exposed alternately to dew and sunlight. It is therefore probable that if it is really with this species of cotton that the Chinese make their nankeens they surely have a method of fixing the brown color."

[10] Rafinesque, C. S.: *Sylva Telluriana* pp. 14–19. 1838.
[11] De Lasteyrie, C. P.: *Du cotonnier et de sa culture*, pp. 139–146. 1808.
[12] Tussac, F. R. de: *Flore des Antilles* **2**: 67–68. 1818.

Conclusions

A study of the above arguments and quotations must bring us to the following conclusions: (1) That neither *G. mexicanum* nor *G. siamense* are proper names for American Upland cotton; (2) that for more than a hundred years "Siam cotton" was a general name given to several species or varieties of West Indian cottons having tawny or brownish lint and to occasional white forms of these; and (3) that there has been brought forward no valid evidence to indicate an Asiatic origin for our American Upland cotton.

ZOOLOGY.—*Some new intermediate hosts of the Asiatic human blood fluke.*[1] Paul Bartsch, U. S. National Museum.

The rôle played by fresh-water mollusks as intermediate hosts of Trematode worms parasitic upon man, has received considerable attention in the last few years. As the elimination of the mosquito, or the curtailment of its development, eliminates or curtails malaria, so the elimination of the intermediate molluscan host of flukes will place a check upon fluke diseases. Great work has been done by Japanese workers in this field and more recently by Doctors Faust and Melaney in China.

The known intermediate hosts of *Schistosoma japonica*, the Asiatic human blood fluke, belong to two genera, namely, *Katayama* and *Oncomelania*. The first of these is typified by *Katayama nosophora* Robson, made known to us by the careful studies of Robson based upon specimens secured in the Katayama district in the Province of Bingo on the Island of Hondo, Japan. In the present paper I am recognizing as subspecifically distinct from this, the form that occurs at Kurume on the Island of Kiushiu, Japan, under the name of *Katayama nosophora yoshidai*. The Island of Formosa harbors the third race, *Katayama formosana*, described by Pilsbry and Hirasi as *Blanfordia formosana* some time ago.

Dr. Faust's researches in Chinese Schistosomiasis have brought to light the occurrence of *Katayama* on the mainland, and I am describing as *Katayama fausti* the species discovered by Faust at Shaohing, Chekiang Province, China, and as *Katayama fausti cantoni* the race which he found at Canton, Kwangtung Province, China.

The genus *Oncomelania*, of which there is more than one race, is the intermediate host of the human blood fluke in the Yangtse Valley, China. More material will be needed than I have at hand before a systematic discussion of this group can be undertaken.

[1] Published by permission of the Secretary of the Smithsonian Institution.

Katayama nosophora yoshidai, new subspecies

Shell elongate-conic, brownish horn-colored. Nuclear whorls well-rounded, smooth (always decollated in the adult specimens that we have seen). Postnuclear whorls strongly rounded, narrowly shouldered at the summit. The portion of the summit that is appressed to the preceding turn forms a darker colored zone than the rest of the whorl. The postnuclear whorls are marked by indications of somewhat irregularly developed and spaced, axial, curved thread-like riblets. These riblets are a little stronger on the last whorl than on the preceding. At irregular intervals strong varicial thickenings are present. Periphery of the last whorl inflated, strongly rounded. Base short, strongly rounded, narrowly openly umbilicated. Aperture very broadly oval; outer lip strongly curved with a strong varicial thickening immediately behind the peristome; inner lip almost vertical, curved, reflected over and almost half covering the umbilicus; parietal wall covered by a thick callus.

The type, Cat. no. 362024, U. S. N. M., was collected by Dr. A. Sadao Yoshida at Kurume, Kiushiu Island, Japan. It has lost the nucleus. There are eight whorls remaining, which measure: Length, 8.2 mm.; diameter, 3.3 mm. Cat. no. 340953, U. S. N. M., contains several hundred additional specimens from the type locality, collected by Dr. Yoshida.

This subspecies differs from *Katayama nosophora nosophora* in being in every way more robust and larger, and in having a much stronger sculpture than that race.

Katayama fausti, new species

Shell narrowly elongate-conic, horn-colored with a brownish tinge. Nuclear whorls decollated in all our specimens. Postnuclear whorls well rounded, narrowly shouldered at the summit, marked by very slender, curved, axial threads and rather inconspicuous varicial thickenings at irregular intervals. A very heavy varix forms a decided callus immediately behind the peristome, which extends from the posterior angle of the aperture undiminished to the columella. Periphery of the last whorl well rounded. Base short, well rounded, very narrowly umbilicated. The base is drawn out anteriorly to join the varicial callus referred to above. Aperture oval, pale brown within; peristome darker; outer lip gently curved, inner lip curved and reflected over about half the umbilicus; parietal wall forming a strong callus that renders the peristome complete.

The type, Cat. no. 362025, U. S. N. M., was collected by Dr. E. C. Faust at Shaohing, Chekiang Province, China. It has lost the nucleus; the remaining $5\frac{1}{2}$ whorls measure: Length, 6.5 mm.; diameter, 2.7 mm.

Katayama fausti fausti resembles in slenderness *Katayama nosophora nosophora,* but is at once distinguished from this by the exceedingly strong varical callus behind the peristome. The axial sculpture in this species is also much finer than in *Katayama nosophora nosophora.*

Cat. no. 362026, U. S. N. M., contains paratypes also collected by Dr. Faust.

Katayama fausti cantoni, new subspecies.

Shell elongate-conic, thin, semi-translucent, horn-colored with a brownish flush. Nuclear whorls decollated in all our specimens. Nuclear whorls

strongly rounded, narrowly shouldered, marked by obsolete, curved axial threads which are a little stronger on the last turn than on the rest. In addition to these there are inconspicuous varicial streaks at irregular intervals. Periphery of the last whorl well rounded. Base moderately long, well rounded, narrowly umbilicated, anteriorly produced to meet the strong callus-like varix which extends behind the peristome from the posterior angle of the aperture to the base. Aperture oval, pale brown within, with a dark brown edge at the peristome; outer lip strongly curved; inner lip moderately curved and reflected over about half the umbilicus; parietal wall covered by a rather thick callus.

The type, Cat. no. 362027, U. S. N. M., was collected by Dr. E. C. Faust at Fatshan near Canton, China. It has 6.1 whorls, and measures: Length, 6.5 mm.; diameter, 2.7 mm. Cat. no. 362028, U. S. N. M., contains paratypes also collected by Dr. Faust.

The present subspecies differs from *Katayama fausti fausti* in being much thinner-shelled, and in having the varix behind the peristome much less strongly developed. The axial sculpture here is also much finer and much closer spaced than in *Katayama fausti fausti*. It is much larger than *Katayama nosophora nosophora*, but smaller than *Katayama nosophora yoshidai*. It differs from both these Japanese forms by having the varix behind the peristome much stronger.

ENTOMOLOGY.—*New beetle guests of army ants.* W. M. MANN, Bureau of Entomology, Department of Agriculture. (Communicated by S. A. ROHWER.)

The four species of beetles here described are file guests of army ants. Dr. E. Wasmann has made photos of three of them, and included the fourth, *Ecitopora brevicornis* new species, in a table of species in that genus soon to be published in a general account of the Eciton guests.

All belong in the tribe Myrmedoniae of the Aleocharinae, and the two new genera add a little to the heterogeny of this already unnatural group.

The types of these species will be deposited in the U. S. National Museum.

Ecitopora brevicornis, new species

Length 1.8 mm.

Black, except abdomen and appendages which are brownish, the first two and the apical abdominal segment much lighter than the rest, the antennae reddish brown at base and the legs yellow. Opaque, ventral surface of abdomen somewhat shining; head, pronotum and elytra densely and rather coarsely, abdomen more finely, and the ventral surface shallowly punctate.

Hairs on head, thorax, elytra, and abdomen exceedingly fine, short, recumbent, yellow in color, abundant, longer and abundant on appendages and ventral surface of abdomen; mixed with stiff, erect black hairs on antennae and apical portion of abdomen.

Head a little broader than long, front broadly and rather strongly impressed at middle, with a narrow median impression with sublucid surface extending

its entire length. Antennal scape about as long as the second and third joints together, second joint as long as broad, joints 4 to 8 two times as broad as long, joints 9 and 10 three times as broad as long. Prothorax a little broader than long, broadest at anterior corners, evenly narrowed behind to the very broadly rounded posterior corners; disc broadly and shallowly impressed at middle, with elongate impressions at sides separated from the median portion by very broadly rounded ridges. Elytra at base considerably broader than pronotum, together broader than long; humeral and posterior corners rounded, sides slightly convex. Abdomen flat above, strongly convex beneath, narrowly margined at sides, the ultimate dorsal sclerite at basal fourth with a pair of short, curved, acute spines.

Legs slender.

Type locality.—Cachuela Esperanza, Río Beni, Bolivia.

Host.—*Eciton burchelli* Westw.

Described from a single specimen running with the ant column.

Close to *opaca* Wasm. but the body is broader and darker in color, the antennal joints are shorter and broader, with the apex obtusely conical (in *opaca* it is more acute), and the abdomen is more finely punctate.

Ecitophya gracillima, new species

Length 5 mm.

Reddish brown, elytra dark brown to black. Subopaque, densely and moderately finely punctate throughout. Erect hairs on head and body coarse, golden brown in color, not very abundant, on appendages finer; abdomen with very fine, not abundant yellow pubescence.

Head longer than pronotum and nearly three times as long as broad, gradually broadened from occiput to eyes; vertex convex, front at middle feebly impressed longitudinally. Clypeus at basal half constricted and convex, broadly triangular in front, with the anterior border very feebly emarginate. Eyes very convex, about as long as the transverse diameter of first antennal joint. Antennae slender, only slightly thickened apically; first joint nearly as long and a little thicker than the third, enlarged near base and continuing of subequal thickness to apex; second joint broader than long and about one-fourth as long as the third, which is distinctly longer than the fourth and fifth together, joints 4 to 9 longer than broad; joint 10 shorter than the 9th; terminal a little longer than the penultimate joint, with sides nearly parallel on basal half, apical half conical, subacuminate at tip. Pronotum shorter than elytra, a little less than twice as long as broad, broadest in front of middle where the sides are rounded (here a little broader than head including eyes), the anterior corners and border rounded; sides at posterior half nearly straight, posterior corners subangulate, border straight; disc at middle with narrow, strong sulcus, extending five-sixths its length; at sides posterior to middle broadly and shallowly impressed. Scutellum longer than broad, its apical border narrowly rounded and sublamellate. Elytra together longer than broad, humeri rounded, sides nearly straight and parallel. Abdomen slender, scarcely broader than elytra, as long as head and thorax together. Legs long and very slender.

Type locality.—Holotype and paratype. Cachuela Esperanza, Río Beni, Bolivia.

Host.—*Eciton hamatum* (Fabr.).

Near *Ecitophya simulans* Wasm. but smaller and lighter colored, with a much more slender abdomen, shorter antennal joints and less pronounced impressions on sides of pronotum.

Wasmannina, new genus

Form elongate, slightly physogastric; heavily chitinized species. Head broad, not constricted behind. Eyes large and very convex. Maxillary palpi 4-jointed, the basal joint very small, second joint more than half as long as the third, narrow at base and gradually thickened toward apex; third joint cylindrical, slender, three and one-half times as long as broad; terminal joint coarse, subulate, less than half as long as the third. Mandibles rather large, arcuate, acute at tips. Antennae short and stout, first joint scapiform. Pronotum moderately elongate, deeply impressed at middle, inflexed at sides. Elytra simple, not longer than pronotum. Abdomen a little longer than head and thorax together, broader and thicker than the thorax, strongly convex above and very strongly beneath, moderately margined at sides, with 6 distinct segments visible from above. Prosternum short, with a strong median carina and anterior border margined by a strong and sides by weak carinae. Mesosternum elevated between coxae as a high, strong carina; posterior half broad and rather strongly convex. Metasternum short. Anterior and middle coxae separated, posterior approximate. Femora nearly straight, stout; tarsi 4–5, 5-jointed, the middle and posterior metatarsi not much shorter than remaining joints together.

Genotype.—Wasmannina trapezicollis.

Wasmannina trapezicollis, new species

Length 6 mm.

Dark brown to black, opaque; legs and basal joint of antennae and parts of abdomen red brown and shining. Head, thorax, elytra, and mesosternum densely, granulose-punctate, the remainder more finely and shallowly but equally densely punctate. Stiff, black, erect hairs sparsely distributed on head and body, more abundant on apical half of ventral portion of abdomen; very fine and silky yellow recumbent hairs abundant on abdomen.

Head a little longer than broad, sides posterior to eyes broadly rounding into the posterior border, which is convex at sides and narrowly concave at middle. Front impressed at middle. Eyes about as long as their distance from the occipital corners. Clypeus strongly and narrowly carinate at middle. Antennae thick and short, not longer than head and pronotum together; first joint longer than the second and third together with the apical two-thirds strongly enlarged and rounded, nearly twice as thick as the second; joints 3 to 9 transverse, 10 and 11 longer than broad, the terminal slightly longer than the penultimate and rounded at tip. Pronotum about one and one-half times broader than head, nearly one-half longer than broad, widest just behind the rounded anterior angles, from where the nearly straight sides converge to the very broadly rounded hind angles and posterior border; anterior border straight at sides, convex at middle; disc at middle with a profound, narrow, longitudinal impression which is broadest in front, deepest at middle, and extends from the anterior border four-fifths the length of the disc. Elytra together broader than long; sides nearly straight and very feebly divergent behind, humeri rounded, posterior angles very broadly rounded, the hind margin angulately excised at middle.

Type locality.—Cachuela Esperanza, Río Beni, Bolivia.

Host.—Eciton crassicornis Smith.

The holotype and single paratype were collected from a file of the ants crossing a road.

The broad form of the head and thorax, strongly sulcate prothorax, the structure of the antennae and the pro– and mesosternum are distinctive in this genus. The body is unusually heavily chitinized and punctate.

Acamatoxenus, new genus

Form elongate, with abdomen enlarged behind, constricted anteriorly. Head depressed, elongate and narrowed behind. Eyes large and convex. Maxillary palpi 4-jointed, the basal joint very small, second joint a little longer than broad and about one-third as long as the third joint, which is subcylindrical, nearly four times as long as broad, and feebly bent on basal half; terminal joint slender, subulate. Labial palpi 3-jointed. Mandibles rather strong, apparently simple, bluntly tipped. Antennal fossae deep, extending to anterior border of head. Antennae 11-jointed, basal joint clavate, as long as second and third joints together. Labrum feebly convex, its anterior border strongly concave at middle, sides rounded. Pronotum elongate; laterally compressed, side margins deflexed, strongly lobed at middle opposite coxae. Elytra elongate, narrowed behind; humeri rounded, subgibbous. Abdomen carried elevated, constricted in front in the form of a short petiole which, in profile, is a little longer than high, with the dorsal surface strongly margined at sides and in the middle with an elongate elevation separating two deep lateral concavities; remainder of abdomen strongly swollen, very convex beneath and moderately above; not margined; seven dorsal segments visible. Prosternum in front of coxae broadly concave, margined in front and behind. Mesosternum prominent, convex, extending forward as a broad carina between middle coxae. Legs long and slender, femora normal; front coxae contiguous, middle and hind coxae separated; tarsi 4–5, 5-jointed; middle and posterior metatarsi very elongate.

Genotype.—Acamatoxenus suavis.

Acamatoxenus suavis, new species

Length 3.5 mm.

Reddish brown, legs and apex of abdomen yellowish, shining. Head, pronotum, elytra, and legs and petiole with small, setigerous tubercles, sparsest on head and most abundant on the elytra, mesothorax, and sides of abdominal pedicel; large foveolate punctures on head, thorax, pronotum, epimera, and mesothorax; abdomen microscopically punctate, except near border; stronger punctation in rows near posterior margins of abdominal segments; antennae densely punctate and subopaque. Long, fine yellow-brown hairs moderately abundant on head, body, and appendages; less abundant on dorsum of abdomen and arranged in rows on apical half of segments.

Head one and five-eighths times longer than broad, broadest just behind eyes, from where the nearly straight sides converge to the prominently rounded occipital corners. Clypeus flat, about five times as broad as long, straight at anterior border. Front with a large, median, very profound impression. Vertex and occipital border deeply excised, the "neck" portion short and transversely concave. Antennae with first joint scapiform, thick, slightly enlarged toward apex; basal joint equal in length to the two following together, second small, clavate, less than half as long as the third, which is nearly as long as the fourth and fifth together and twice as broad apically as at base; remaining joints (except the ultimate) each shorter and very slightly thicker than the preceding; terminal joint conical, obtuse at

apex, about as long as the joints 9 and 10 together. Eyes large, with distinct facets, situated at front of sides of head, half as long as their distance to occipital border. Pronotum not as broad as head including eyes, more than twice as long as broad and only a little broader behind than in front; anterior border convex at middle, produced at corners into obtuse angles, sides in front of middle nearly straight and parallel, then very broadly subgibbous and, posterior to this, feebly concave to the broadly rounded posterior corners, posterior border convex; median surface in front of middle shallowly and broadly impressed; sides posterior to middle with large and profound pits. Elytra together one and one-third times as broad as pronotum, together longer than broad; sides in front of middle nearly straight and parallel, then convergent, posterior corners and margins broadly rounded.

Type locality.—San Diego Cocula, Jalisco, Mexico.

Host.—Eciton (*Acamatus*) *cocula* Mann (MSS.)

The single specimen before me was found among a small cluster of this ant, beneath a stone.

The genus is evidently a "file-guest" and distinct from all related forms in the structure of the head, which is very broad in front, and, due to the marked incision at middle of posterior border, bilobed behind, with a profound frontal fossa.

The abdomen is swollen behind, somewhat as in *Mimeciton* and *Mimonilla*, but both of these lack the distinct pedicel in front, and the structure of the head and thorax is entirely different.

ENTOMOLOGY.—*The mosquitoes of Peary's North Pole expedition of 1908.* (*Diptera, Culicidae*). HARRISON G. DYAR and RAYMOND C. SHANNON, U. S. National Museum. (Communicated by S. A. ROHWER.)

A small collection of insects made on Admiral Peary's 1908 polar expedition has recently been found in material at the National Museum. The actual collector of the specimens is not of record, nor is there anything in Peary's narrative that throws light on the matter. Captain R. A. Bartlett of the expedition states that the collecting must have been done by somebody on the "Erik," the supply boat. The mosquitoes of this collection are here recorded.

Aëdes cantator Coquillett

One female, Sydney, Nova Scotia, July 8, 1908. This is the first authentic record of the species from Canada. Dyar gives[1] the distribution as "probably in New Brunswick and Nova Scotia," which is now in part verified.

Two species of black-legged *Aëdes* were taken in Hawk's Harbor, Labrador, in female examples only. It is possible that these are forms of

[1] Trans. Royal Can. Inst. 13: 106. 1921.

punctor or *communis*, and, indeed, the smaller and more abundant species is practically identical with *Aëdes punctodes* Dyar, of northern Alaska; but we think it will be more definite to apply special names to them until males have been found.

Aëdes pearyi, new species

Proboscis long, as long as the abdomen, slender, black. Palpi rather long, about one-fifth the length of proboscis. Head with narrow curved light brown scales, which are whitish on the vertex in some lights. Mesonotum black in the integument, the scales narrow, curved, dark bronzy brown dorsally, shading to light brownish yellow about the antescutellar space and to a rather broad area of light gray on the sides. About 20 proepimeral setae present (10 in *A. punctor* Kirby). Abdomen black, the segments with basal white bands, broad and even, two-fifths the length of the segment, scarcely widened laterally; venter uniformly whitish-scaled. Legs black; femora pale beneath, rather densely whitish speckled above; tibiae with pale reflection below and small white tips; tarsi black. Wing scales hair-like black; costa and sixth vein white-scaled at base. Length, 6 mm.

Type and paratypes.—Four females, no. 27861, U. S. Nat. Mus; Hawk's Harbor, Labrador, July 20, 1908.

Aëdes labradorensis, new species

Proboscis slightly shorter than the abdomen, black. Palpi about one-fifth the length of proboscis. Head with dark brown narrow curved scales, which shade to whitish on the sides rather than on the vertex. Mesonotum black, with narrow curved dark brown scales, shading to yellowish about antescutellar space, but not gray on the lateral margins; black posterior side stripes often quite distinct and edged within by a line of light scales, sometimes less contrasted. Abdomen black with basal segmental whitish bands, which are narrowed centrally in an arc and are not more than one-third the length of the segment dorsally, widening moderately at the sides; venter whitish scaled, the tips of the segments sometimes blackish shaded. Legs black, the femora whitish beneath and narrowly tipped with white. A few white scales at base of costa. Length, 4.5. to 5 mm.

Type and paratypes.—11 females, no. 27862, U. S. Nat. Mus.; Hawk's Harbor, Labrador, July 20, 1908.

Three females reported[2] by Howard, Dyar and Knab from Cape Charles, St. Lewis Inlet and Rigolet, Labrador, appear to be this species, and have been placed under *labradorensis* instead of under the *provocans* label as the latter has been made a synonym of *punctor* by Dyar.[3] A twelfth female from Hawk's Harbor is light gray. We think it to be a badly faded specimen of *labradorensis*, although the date of capture is the same as that of the fresh specimens.

Aëdes alpinus Linnaeus

Two females, much worn and abraded, we refer to this species, although a positive identification is impossible on account of condition and sex. Godhavn, Greenland, August 29, 1908; Holstenborg, Greenland, September 2, 1908.

[2] Mosq. N. & Centr. Amer. & W. I. 4: 749. 1917.
[3] Ins. Ins. Mens. 12: 41. 1924.

PROCEEDINGS OF THE ACADEMY AND AFFILIATED SOCIETIES

THE ENTOMOLOGICAL SOCIETY

361ST MEETING

The 361st meeting of the Entomological Society was held at the National Museum December 6, 1923, with President HOWARD presiding and 37 persons present.

GEORGE A. DEAN, of the Bureau of Entomology, was elected a member of the Society.

The following officers for 1924 were elected: *President*, A. G. BÖVING; *Vice-Presidents*, R. A. CUSHMAN and J. M. ALDRICH; *Editor*, CARL HEINRICH; *Recording secretary*, C. T. GREENE; *Corresponding secretary-Treasurer*, S. A. ROHWER; *Executive Committee*, A. N. CAUDELL, W. R. WALTON, J. A. HYSLOP; Vice-President of the ACADEMY, S. A. ROHWER.

Program: J. E. GRAF: *Sweet potato weevil eradication.* The sweet potato weevil, *Cylas formicarius* Fabr., is widely distributed throughout the tropics. The insect was first found in the United States in the vicinity of New Orleans about 1875. The facts concerning the first infestations are vague but from information collected by T. H. Jones, it appears that the weevil was imported from Cuba with seed sweet potatoes. The spread of the insect was very slow. Outbreaks occurred at Manatee, Florida, in 1878, and on the Gulf coast of Texas in 1890. In the following years occasional publications dealing with this species were issued, and these showed that the Gulf coast was slowly becoming generally infested.

Food plants of the weevil belong to the Convolvulaceae Family. Seven species of the genus *Ipomoea* are infested to some extent, four of which are favorite food plants. A few species of the genera *Calonyction*, *Pharbitis*, and *Jacquemontia* are infested slightly. Many of the large-stemmed tie-vines, especially the perennial species, are utilized as food plants by this insect.

362D MEETING

The 362d meeting of the Society was held at the National Museum, January 9, 1924, with President BÖVING in the chair and 53 persons present.

Reports of officers for the year 1923 were read and approved.

Program: The retiring President, Dr. L. O. HOWARD, gave a short review of the entomological societies of the world. The address was discussed by Messrs. SCHAUS, SCHWARZ, BAKER, ALDRICH, and MARLATT.

H. S. Barber exhibited specimens of one of the smallest known beetles, recently received from A. Dampf, who collected them from a *Polyporus* on a fir near Mexico City. Two species[1] are represented in the sample received, and with them are larvae supposed to be their young. The beetles are a little over 0.5 mm. long by about 0.1 mm. wide, and are therefore twice as long as the smallest known beetle, *Nanosella fungi* Le Conte, which is described as only a hundredth of an inch in length. This latter species has apparently never been found since its original capture by Count Victor Motschulsky, at Atlanta, Georgia, seventy years ago. A related widespread species, found only once at Cincinnati, Ohio, by Charles Drury has, however, been recorded under this name.

[1] Described in Proc. Ent. Soc. Washington **26**: 172 and 174. 1924, as *Cylindrosella dampfi* and *Mycophagus robustus*.

Although no information as to how it lived in the fungus was received, the extremely elongate form strongly suggests that it lives in the sporetubes and its coloration—clear yellow except the black head—suggests that it sits in the sporetubes with its head downward and nearly flush with the mouth of the tube. The larvae, on the contrary, have the hind end infuscated and strongly armed with formidable processes, suggesting the reverse to be the normal position in the sporetubes. It is also suggested that these forms are quite distinct from other groups of Ptiliidae, as they are dependent upon fresh polypore fungi.

Program: J. C. BRIDWELL: *Bruchidius ater* (*Marsham*), *an unrecorded immigrant from Europe* (*Bruchidae, Coleoptera*). In the proceedings of the meeting of the New York Entomological Society on October 1, 1918, Olsen is recorded as exhibiting specimens of *Bruchus calvus* Horn from Woods Hole, Massachusetts, where he is reported to have found it abundantly, breeding in *Cytisus scoparius*, the common broom. In a note, apparently by Charles Leng, it is suggested that the insect in question may be an introduced European form, since, under several names, Bruchidae have been recorded as breeding in the broom.

As a result of the examination of material in several collections in New York bred from the broom at Wood's Hole, the speaker found that the specimens in question were of the common European species which affects the broom, and were distinct from *calvus*. The synonomy of this species is involved, so that there is some difficulty in ascertaining its proper specific name. It has been commonly called *Bruchus villosus* or *cisti*, but Schilsky, who examined Fabrician types finds that these names apply to another species. It has also been called *pubescens* Germar, but an older available name is *ater* Marsham. Baudi has identified Olivier's *fusciatus* as based upon specimens of this species, and it seems preferable to use Marsham's name. The species is referred by Schilsky to his genus *Bruchidius*.

Bruchus calvus Horn is referable to *Acanthoscelides* Schilsky and may be readily distinguished from *Bruchidius ater* by the form of the pronotum, which is much more transverse in *B. ater*. In *A. calvus* it is subconical and longer than broad while in *B. ater* it is broader than long. *Bruchidius ater* is represented in the National Museum by several series of specimens from various sources including some intercepted in the seeds of *Cytisus laburnum* from France by H. B. Shaw in quarantine at Washington. There are European records of its breeding in the seeds of the black locust (*Robinia pseudacacia*) but these are probably incorrect.

It may be noted that the seeds of *Cytisus* contain a considerable proportion of spartein, an alkaloid intensely poisonous to mammals. The East African Bruchid *Carypemon cruciger* (Stephens) also breeds in a poisonous seed, that of *Abrus pecatorius*. In this case, however, the poisonous substance is proteid in its nature and is destroyed by heat. It is possible that it is only poisonous when injected into the blood. It is occasionally used in India by cattle poisoners.

The food plants of *A. calvus* still remain undiscovered. It is northeastern in its distribution, and is not uncommon from the District of Columbia to Massachusetts and Michigan; apparently it is abundant in the pine barrens of New Jersey.

363D MEETING

The 363d meeting was held at the National Museum February 7, 1924, with President BÖVING in the chair and 56 persons present.

The following were elected to membership in the Society: P. D. SANDERS, G. S. LANGFORD, and S. F. POTTS.

Program: C. P. CLAUSEN: *Entomological investigations in the Orient.* The paper was divided into two parts: (1) General observations on crop pests in Japan, and (2) a discussion of various biological factors entering into the problem of the introduction and establishment of the ten species of parasites of *Popillia japonica* and related forms, found in Japan and Korea.

J. L. KING: *A brief sketch of entomological work in Japan.* In Japan there is no federal or centralized bureau of entomology comparable to that of the United States. Most of the work is carried on in stations supported by the Prefectoral Governments or in part by appropriations of the Division of Agriculture. Much work, too, is under the direction of universities and agricultural colleges. Many of these stations have their problems narrowed to those concerning a single crop such as rice, fruits, silk culture, etc.

A short review of the work of the chief economic entomologists of Japan was given, with special reference to the work of Dr. S. I. Kuwana, Director of the Imperial Plant Quarantine Station, Yokohama. This station has branches at all the chief ports of Japan and Korea. Its chief function is the interception and inspection of plants for noxious insects and plant diseases. General work in economic entomology is also conducted by this department. The collections of Dr. S. Matsumura, of the Imperial University of Hokkaido, were described.

364TH MEETING

The 364th meeting was held in the National Museum March 6, 1924, with Vice-President CUSHMAN presiding and 31 persons present.

Program: C. T. GREENE: *Remarks on the puparia of muscoid flies.* It was shown how the various types of puparia and their spiracular plates correlated with the adult characters. The following six families were used in this comparison: Tachinidae, Dexiidae, Sarcophagidae, Oestridae, Muscidae (Calliphoridae), and Anthomyidae. The paper was discussed by Messrs. ALDRICH, EWING, and SNODGRASS.

R. E. SNODGRASS: *Anatomy as a basis for research in entomology.* Anatomy in its widest sense, is basic in all branches of entomological research, such as taxonomy, metamorphosis, physiology, senses and sense organs, parasitology, pathology, ecology, physiological effect of insecticides, insecticides, chemotropism. This classification of subjects is merely that by which the different branches of entomology are taken up by the specialist but includes what may be called the Fundamentals of Entomology. Anatomy may not be directly important to each one of these subjects, but workers in each are likely at some time to require a knowledge of some anatomy; to many of them anatomy is directly fundamental.

The paper was discussed by Messrs. ALDRICH, BAKER, EWING, GRAF, HALL, HOWARD, WHITE and ZIEGLER.

Notes and Discussion: Dr. Aldrich stated that the National Museum had acquired by exchange with the Zoological Museum, Copenhagen, representatives of 80 species of Diptera from Greenland, including cotypes of 13 species. With the exception of a few mosquitoes, these are the first Greenland Diptera to be acquired by the Museum. They represent almost half of the known species.

The flora and land fauna of Greenland were entirely exterminated during the ice age, and are still very meager. Henriksen and Lundbeck have given[1]

[1] *Meddelelser om Grönland* vol. 22. 1917.

an exhaustive list of the insects of Greenland, the number of species in the different orders being as follows: Coleoptera 41, Hymenoptera 66, Diptera 188, Siphonoptera 6, Lepidoptera 46, Hemiptera 12, Corrodentia 2, Mallophaga 43, Anoplura 7, Orthoptera 2, Thysanoptera 1, Odonata 1, Trichoptera 5, Neuroptera 2, Ephemerida 1, Collembola 14.

365TH MEETING

The 365th meeting was held at the National Museum April 3, 1924, with President BÖVING presiding and 30 persons present.

Dr. BÖVING read a translation from Swedish of Professor Ivar Tradgardh's paper *Problems and methods in forest entomology*. This paper was originally given at the opening of the first Scandinavian Entomological Congress, held at Stockholm in November, 1923.

Dr. T. E. SNYDER gave an account of a trip to Panama made early in the year. Of particular interest were the termite nests, seen along the railroad from Colon to Panama and along the road to the Rio Tapia. Mention was made of the damage done to the Hotel Tivoli by termites and to the lead cables of the Miraflores Locks by Coptotermes. Dr. Snyder referred to the excellent opportunities for biological studies at the tropical research station at Barro Colorado Island, in Gatun Lake.

366TH MEETING

The 366th meeting was held at the National Museum May 1, 1924, with President BÖVING presiding and 30 persons present.

Drs. BÖVING and HOWARD paid a tribute to Dr. E. A. SCHWARZ, who had just reached his 80th birthday.

Program: J. B. PARKER: *On the biology of Tricrania.* The meloid beetle *Tricrania sanguinipennis* Say is parasitic on the solitary bee *Colletes rufithorax* Swenk. The beetle passes the winter in the ground in the brood cell of the bee from which it emerges, and lays its egg three or four weeks before the bee begins its nesting activity. The eggs of the beetle are laid on the under side of objects lying loose on the ground occupied by the bees. The time required for the egg to hatch is about four weeks, and the young larval beetles, on hatching, scatter about over the nesting area. The evidence obtained indicates that the beetle gains entrance to the nest of the host by gaining lodgment on the female bee and riding down on her to the brood-cell. Once in the brood-cell the parasite first devours the egg of the bee and then completes its development by devouring the honey and pollen provided by the bee for her young. The insect passes through six instars in reaching the pupal condition. In moulting the skin is cast free from the body in each of the first three instars. In the fourth instar the cast skin is not ruptured but remains intact as a covering for the insect. The fifth is cast in the same fashion within the fourth, but the sixth is ruptured and cast free from the body within the fifth. The pupal stage is passed within the case formed by the cast skins of the fourth and fifth instars and within this case also the adult remains until time for it to emerge the following spring.

The time of emergence of the beetle and egg laying in the District of Columbia varied in the different years of observations from March 30 to April 21, and the one successful hatching of the eggs under field conditions required 26 days. How long the first instar can survive in the field is not known; in the laboratory without food the greatest limit was eleven days. Data obtained showed that the period of feeding, which includes the first four larva instars,

varied from 26 to 41 days. In 1920 all larvae reared in the laboratory had transformed to the pupal condition by August 23, and beetles obtained from the brood chambers of the bee that year on August 31 were all in the pupal stage. All beetles that year, whether bred in the laboratory or obtained from the nesting area in the pupal stage, transformed to the adult stage prior to September 17. The adult beetle, therefore, remains inactive in the brood cell, where it developed from September till the following spring.

Notes and Discussion: The receipt of a number of drawings of the larvae of bees from Brother Claude Joseph, of Santiago, Chile, was reported by S. A. ROHWER.

CARL HEINRICH gave an account of a trip to institutions in New York, Boston, Ottawa, and Decatur, Illinois, in connection with his studies of Microlepidoptera.

Professor C. B. CROSBY, of Cornell University, spoke of the occurrence of *Pomphebius sayi* in New York every second year.

R. C. SHANNON reported the capture of several specimens of the rare Syrphid fly.

367TH MEETING

The 367th meeting was held at the National Museum June 5, 1924, with President BÖVING presiding and 35 persons present.

Program: MARCUS BENJAMIN: *Thoughts on entomological writings.* The speaker made suggestions for the preparation of manuscripts.

Notes and Discussion: JAMES ZETEK gave an account of the scientific research work that is being done on the Canal Zone. Barro Colorado Island, recently established as a tropical research station, has an area of six square miles. A screened building has been erected here. Scientists interested in tropical research are invited to visit the island. Nineteen species of termites and about 80 species of mammals have been reported from Barro Colorado.

Mr. Caudell exhibited a specimen of *Arixenia jacobsoni* Burr, an earwig-like creature found in bat caves in Java.

368TH MEETING

The 368th meeting was held at the National Museum October 2, 1924, with President BÖVING presiding and 28 persons present.

Program: A. C. BAKER: *A major epidemic of a new pest on Citrus.* The paper was illustrated by charts showing Citrus localities in Florida and climatic conditions, and was discussed by Messrs. MASON, HYSLOP, GAHAN, and ROHWER.

Dr. J. M. Aldrich exhibited some specimens of the larvae of *Nothomicrodon aztecarum* Wheeler, found in the nest of the ant *Azteca trigona* Emery. This Dipteron is a remarkable form which can not be placed definitely in any family. The specimens were donated to the National Museum by Dr. W. M. Wheeler, of Harvard University.

CHAS. T. GREENE, *Recording Secretary.*

SCIENTIFIC NOTES AND NEWS

At the annual meeting of the Washington Chapter of the American Institute of Chemists, held January 9, the following officers were elected for the ensuing year: *President,* J. F. COUCH, Bureau of Animal Industry; *Vice-President,* H. E. PATTEN, Consulting Chemist, Washington Loan and Trust Building; *Secretary,* J. N. TAYLOR, Bureau of Animal Industry;

Treasurer, H. L. LOURIE, U. S. Tariff Commission. Dr. C. E. MUNROE was elected Honorary President.

At the meeting of the Petrologists' Club at the Geological Survey January 21, F. L. HESS and W. T. SCHALLER discussed *Replacement in pegmatites*. Definite progress can be recorded since the previous discussion of the subject of the club in March, 1923. The new evidence tends to show the common occurrence of replacement of one mineral by another in the formation of many pegmatites.

The following program of radio talks by station WRC, under the auspices of the Smithsonian Institution, has been announced: February 19, H. S. WASHINGTON: *What the Earth is made of;* February 26, W. M. MANN: *Habits of ants;* March 5, E. LESTER JONES: *The work of the Coast and Geodetic Survey in saving life and property at sea;* March 12, B. A. BEAN: *American fishes.*

Part Four of the *Trees and shrubs of Mexico*, by PAUL C. STANDLEY (Contributions from the U. S. National Herbarium, Vol. 23), was issued last December. The families treated are from Passifloraceae to Scrophulariaceae, inclusive. It is expected that Part Five, the concluding portion, will be published this year.